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WILMER CUTLER PICKERING HALE AND DORR LLP			EXAMINER	
60 STATE STREET			KISS, ERIC B	
BOSTON, MA 02109				
			ART UNIT	PAPER NUMBER
			2192	
			NOTIFICATION DATE	DELIVERY MODE
			08/28/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

michael.mathewson@wilmerhale.com
teresa.carvalho@wilmerhale.com
tina.dougal@wilmerhale.com

Office Action Summary

Application No.

10/824,685

Applicant(s)

BERG ET AL.

Examiner

Eric B. Kiss

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 June 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. The reply filed June 14, 2007, has been received and entered. Claims 6-11 are pending.

Response to Amendment

2. Applicant's submission of replacement drawings and amendments to the specification appropriately address the objections to the drawings and specification as detailed in the previous Office action, and accordingly, these objections are withdrawn.

Terminal Disclaimer

3. The terminal disclaimer filed on June 14, 2007, disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on Application Number 10/825,007 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Response to Arguments

4. Applicant's arguments with respect to claims 1-5 have been considered but are moot in view of the cancellation of claims 1-5 and in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 6, 7, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Matt Bishop and Micharil Dilger, "Checking for Race Conditions in File Accesses," 1996, Computing Systems 9(2), pp. 131-152 (manuscript version; 20 pages) ("Bishop1996").

Regarding claim 6, *Bishop1996* discloses:

executing computer instructions to analyze the source code listing to create computer models of said control flow to indicate the run-time sequence in which routine calls will be invoked and to create computer models of said arguments for the routine calls (*see, e.g., Bishop1996* at p. 10, paragraph 2);

executing computer instructions to use said computer models of said control flow in order to determine a run-time sequence of execution of a pair of routine calls, said pair of routine calls having a first routine call and second routine call in which execution of the first routine call precedes execution of said second routine call (*see, e.g., Bishop1996* at p. 6, paragraphs 2-4 (describing intervals and a semantic characterization of TOCTTOU binding flaws and race conditions); p. 10, paragraph 2 (describing static analysis including control flow and data flow));

executing computer instructions to determine if a second routine to be executed has an argument referring to a file that is also referred to by an argument of the first routine to be executed and if so to identify said sequence as a race condition vulnerability (*see, e.g., Bishop1996* at p. 7, last paragraph, continuing onto p. 8; p. 9, last paragraph, continuing onto p. 10);

generating a report that is viewable by a user and that identifies the race condition vulnerabilities, so the user may modify the source code listing to address the vulnerability if desired (*see, e.g., Bishop1996* at pp. 16-17 (Appendix 1. Analyzer Output)).

Regarding claim 7, *Bishop1996* further discloses:

the act of executing computer instructions to analyze the source code listing to create computer models of said data flow to indicate the run-time transformations of operand values

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and including the act of using data flow models to resolve the expression-references and operand-references to computer files in the first and second routine calls to detect whether both routines refer to the same computer file (*see, e.g., Bishop1996* at p. 10, paragraph 2).

Regarding claims 9 and 10, these are computer-readable media substantially paralleling the methods discussed above (claims 6 and 7). The use of such computer-readable media is inherent in the software-implemented system of *Bishop1996* (*see, e.g., Bishop1996* at section 4 (pp. 9-11); pp. 16-17 (Appendix 1. Analyzer Output)), and all other limitations have been addressed as set forth above.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matt Bishop and Micharil Dilger, "Checking for Race Conditions in File Accesses," 1996, Computing Systems 9(2), pp. 131-152 (manuscript version; 20 pages) ("Bishop1996") in view of Jong-Deok Choi, et al., "Static Datarace Analysis for Multithreaded Object-Oriented Programs," August 9, 2001, IBM, RC22146 (W0108-016), pp. 1-18 ("J-D2001").

Regarding claims 8 and 11, *Bishop1996* further discloses the control flow model being a control flow graph (*see, e.g., Bishop1996* at p. 10, paragraph 2), but fails to expressly disclose traversing the control flow graph backwards in order to determine the sequential relationship among routine calls in the source code listing. However, *J-D2001* teaches, as part of a system

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for modeling the control flow and data flow of a program for software vulnerability (specifically, race conditions or “dataraces”) detection (*see, e.g., J-D2001* at p. 1, col. 1, paragraphs 1-2), such backwards (depth-first) traversing of a control flow graph in order to determine the sequential relationship among routine calls in the source code listing (*see, e.g., J-D2001* at p. 13, col. 1, paragraphs 3-4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate such backward traversing of a control flow graph as a known means of efficiently processing control flow information.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Rioux patent describes modeling of control flow and data flow for software vulnerability analysis (*see, e.g., Rioux* at col. 2, lines 41-53).

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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11. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Eric B. Kiss whose telephone number is (571) 272-3699. The Examiner can normally be reached on Tue. - Fri., 7:00 am - 4:30 pm. The Examiner can also be reached on alternate Mondays.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Tuan Dam, can be reached on (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Any inquiry of a general nature should be directed to the TC 2100 Group receptionist: 571-272-2100.



Eric B. Kiss
August 22, 2007